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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,521	08/29/2001	David W. Minsek	102162-200	9626

27267 7590 10/27/2003

WIGGIN & DANA LLP
ATTENTION: PATENT DOCKETING
ONE CENTURY TOWER, P.O. BOX 1832
NEW HAVEN, CT 06508-1832

EXAMINER	
HAMILTON, CYNTHIA	
ART UNIT	PAPER NUMBER
1752	6

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-6

Interview Summary	Application No.	Applicant(s)	
	09/942,521	MINSEK ET AL.	
	Examin r	Art Unit	
	Cynthia Hamilton	1752	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Cynthia Hamilton*. (3)_____.

(2) *Mr. William A. Simons*. (4)_____.

Date of Interview: *16 October 2003*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☐ No.
If Yes, brief description: _____.

Claim(s) discussed: *1 and 5-20*.

Identification of prior art discussed: *None*.

Agreement with respect to the claims f)☒ was reached. g)☐ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Attachment: Fax from William A. Simons
15 pages and Activity Report Page dated 10/15/2003

10-16-2003

CYNTHIA HAMILTON
PRIMARY EXAMINER

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The examiner agreed amendments to claims 1-10 would remove all rejections and objections of record and make claims 1, 6-7, 9-10 allowable. The issue of withdrawn claims 11-20 appears to require their rejoinder if no new art is found in searching the process invention. The examiner notes for the record that claim 1 should be marked (Currently amended) instead of (Previously amended) and claim 9 is dependent upon a cancelled claim 8 as proposed in the draft amendment. In claims 11 and 17, after (d), "either" in polylene glycol methyl either acetate should be "ether". See claim 1 where the spelling is correct. Attached is applicant's fax of October 15, 2003 containing Applicant Initiated Interview Request and proposed amendment to claims. The examiner did not fully consider the draft arguments in the fax for or during this interview..

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TELEFAX TRANSMITTAL

Date:

October 15, 2003

To / Company / Telefax:

Examiner Cynthia Hamilton / USPTO / 703.305.6078

From:

William A. Simons

Telephone / Email:

203.498.4502 / wsimons@wiggin.com

Client / matter code:

/

Please copy:

We will copy:

Special Instructions:

14 page(s) following this page

PTOL-413A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Applicant Initiated Interview Request Form

Application No.: 09/942,521 First Named Applicant: David W. Minsek
Examiner: C. Hamilton Art Unit: 1752 Status of Application: After Final

Tentative Participants:
(1) William A. Simons (2) Cynthia Hamilton
(3) _____ (4) _____

Proposed Date of Interview: 10/16/03 **Proposed Time:** 10:00 (AM/PM)

Type of Interview Requested:
(1) [X] Telephonic (2) [ ] Personal (3) [ ] Video Conference

Exhibit To Be Shown or Demonstrated: [X] YES [ ] NO
If yes, provide brief description: Draft Response to Final Rejection Enclosed

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) 112	5,7		[ ]	[ ]	[ ]
(2) 103	1, 6-10		[ ]	[ ]	[ ]
(3) Restriction	11-20		[ ]	[ ]	[ ]
(4)			[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached

Brief Description of Arguments to be Presented:

Claims 8-10 contain same limitations as allowable claims 5 and 6.
Claim 7 is further limited. Process claims commensurate in scope.

An interview was conducted on the above-identified application on _____.

NOTE:
This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).
This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible.

William A Simons
(Applicant/Applicant's Representative Signature) (Examiner/SPE Signature)

DRAFT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	David W. Minsek Eric L. Alemy	Docket:	102162-200
Serial No.:	09/942,521	Art Unit:	1752
Filed:	August 29, 2001	Examiner:	C. Hamilton
Assignee:	MicroChem Corp.	Conf. No.	9626
Title:	EPOXY PHOTORESIST COMPOSITION WITH IMPROVED CRACKING RESISTANCE		

Certificate of Mailing

Date of Deposit
I hereby certify under 37 CFR 1.8(a) that this correspondence (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated above and is addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

DRAFT

Signed: _____

Name: William A. Simons

AMENDMENT AND REPLY TO FINAL ACTION
UNDER 37 CFR 1.116

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In the matter of the above-identified application for Letters Patent and in response to the Office Action made final mailed August 26, 2003, (Paper No. 5) for which a response is due on or before November 26, 2003, please enter and consider the following Amendment and Remarks:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Complete Listing of Claims:

Claim 1 (Previously amended): A photoimagable composition suitable for use as a negative photoresist comprising:

(a) about 75% to about 95% by weight of at least one epoxidized polyfunctional bisphenol A formaldehyde novolak resin;

(b) about 5% to about 25% by weight of at least one polycaprolactone polyol reactive diluent, wherein the sum of (a) and (b) equals 100%;

(c) at least one photoacid generator in an amount from about 2.5 to about 12.5 parts per hundred parts of resin and reactive diluent, which initiates polymerization upon exposure to near-ultraviolet radiation; and

(d) a sufficient amount of casting solvent to dissolve (a), (b) and (c); wherein said casting solvent is selected from the group consisting of gamma-butyrolactone, cyclopentanone, propylene glycol methyl ether acetate, cyclohexanone and methyl ethyl ketone.

Claim 2 (Cancelled):

Claim 3 (Cancelled

Claim 4 (Cancelled

Claim 5 (Cancelled

Claim 6 (Previously presented). The composition of claim 1 wherein the composition additionally contains a nonionic surfactant in an amount of about 0.05 parts per hundred parts solids.

Claim 7 (Currently amended). A photoimageable composition suitable for use as a negative photoresist comprising:

(a) about 75% to about 95% by weight of an ~~epoxy~~ epoxidized polyfunctional bisphenol A formaldehyde novalak resin having an average of about eight epoxy

groups and having an average molecular weight of 1400 gram/mole and having an epoxy equivalent weight of about 215 gram/mole;

(b) about 5% to about 25% by weight of a difunctional or trifunctional polycaprolactone polyol reactive diluent, wherein the sum of (a) and (b) equals 100%;

(c) a triaryl sulfonium hexafluoroantimonate salt in an amount from about 2.5 to about 12.5 parts per hundred parts of the sum of (a) and (b), which initiates polymerization upon exposure to near-ultraviolet radiation; and

(d) a sufficient amount of casting solvent to dissolve (a), (b) and (c) wherein the casting solvent is selected from a group consisting of gamma-butyrolactone, cyclopentanone, propylene glycol methyl ether acetate, cyclohexanone and methyl ethyl ketone.

Claim 8 (Cancelled).

Claim 9 (Previously presented). The composition of claim 8 wherein the casting solvent is gamma-butyrolactone.

Claim 10 (Currently Amended). The composition of claim 7 wherein the composition additionally contains a nonionic surfactant in an amount of about 0.05 parts per hundred parts solids.

Claim 11 (Withdrawn). The process of photoimaging a substance comprising the steps of:

(1) preparing a photoimageable composition suitable for use as a negative photoresist comprising:

(a) about 75% to about 95% by weight of at least one epoxidized polyfunctional bisphenol A formaldehyde novalak resin;

(b) about 5% to about 25% by weight of at least one polycaprolactone polyol reactive diluent, wherein the sum of (a) and (b) equals 100%;

(c) at least one photoacid generator in the amount from about 2.5 to about 12.5 parts per hundred parts of resin and reactive diluent, which initiates polymerization upon exposure to near-ultraviolet radiation; and

(d) a sufficient amount of casting solvent to dissolve (a), (b) and (c) wherein the casting solvent is selected from the group consisting of gamma-butyrolactone, cyclopentanone, propylene glycol methyl either acetate, cyclohexanone and methyl ethyl ketone;

(2) applying this photoimageable composition to a substance in a thickness from about 1 micron to about 100 microns;

(3) exposing the coated substrate to patterned near-ultraviolet radiation to photo image the photoresist coating;

(4) conducting a post-exposure bake on the photoimaged, coated substrate; and

(5) developing the photo imaged photoresist coating with an organic solvent developer to dissolve away the unpolymerized regions and leave negative photoresist image on the substrate.

Claim 12 (Cancelled).

Claim 13 (Withdrawn). The process of claim 11 wherein the substrate is selected from the group consisting of silicon, silicon dioxide, alumina, gallium arsenide, metal, and deposited metal on silicon.

Claim 14 (Withdrawn). The process of claim 11 wherein applying step (b) is carried out by spin-coating the photoimaging composition onto the substrate.

Claim 15 (Withdrawn). The process of claim 11 wherein exposing step (c) is carried out by using an exposure tool with near-ultraviolet radiation from a medium or high-pressure mercury lamp through a photomask containing a pattern of opaque and transparent regions.

Claim 16 (Withdrawn). The process of claim 11 wherein after applying step (b) and prior to exposing step (c) the coated substrate is baked to evaporate the casting solvent.

Claim 17 (Currently amended). The process of photoimaging a substrate composing the steps of:

(1) preparing a photoimageable composition suitable for use as a negative photoresist comprising:

(a) about 75% to about 95% by weight of an ~~epoxy~~ epoxidized polyfunctional bisphenol A formaldehyde novalak resin having an average of about eight epoxy groups and having an average molecular weight of 1400 gram/mole and having an epoxy equivalent weight of about 215 gram/mole;

(b) about 5% to about 25 % by weight of a difunctional or trifunctional polycaprolactone polyol reactive diluent, wherein the sum of (a) and (b) equals 100%;

(c) a triaryl sulfonium hexafluoroantimonate salt in an amount from about 2.5 to about 12.5 parts per hundred parts of the sum of (a) and (b); and

(d) a sufficient amount of casting solvent to dissolve (a), (b) and (c) wherein said casting solvent is selected from the group consisting of gamma-butyrolactone, cyclopentanone, propylene glycol methyl either acetate, cyclohexanone and methyl ethyl ketone;

(2) applying this photo imagable composition to a substrate in a thickness from about 1 micron to about 100 microns;

(3) exposing the coated substrate to patterned near-ultraviolet radiation to photoimage the photoresist coating;

(4) conducting a post-exposure bake on the photoimaged, coated substrate; and

(5) developing the photoimaged photoresist coating with an organic solvent developer to dissolve away the unpolymerized regions and leave a negative photoresist image on the substrate.

Claim 18 (Withdrawn). The process of claim 17 wherein the substrate is selected from the group consisting of silicon, silicon dioxide, alumina, gallium arsenide, metal and deposited metal on silicon.

Claim 19 (Withdrawn). The process of claim 17 wherein applying step (b) is carried out by spin-coating the photoimaging composition onto the substrate.

Claim 20 (Withdrawn). The process of claim 17 wherein after applying step (b) and prior to exposing step (c) the coated substrate is baked to evaporate the casting solvent.

REMARKS

In the present Office Action, claims 1-20 were examined. Claims 11-20 are subject to restriction or election. Claims 1-5 and 7-10 are rejected, claim 6 is objected to, and no claims are allowed.

By this Amendment, claims 7, 11 and 17 have been amended, claims 2, 3, 4, 5, 8 and 12 have been canceled, and no claims have been added. Accordingly, claims 1, 6-11 and 13-20 are presented for further examination. No new matter has been added. By this Amendment, claims 1, 6-11 and 13-20 are believed to be in condition for allowance.

Applicants appreciate the fact that the Examiner has indicated that claims 5 and 6 would be allowable if rewritten in independent form. It should follow that current claims 8-10 are also allowable for the same reasons because they include the same limitations as claims 5 and 6. Furthermore, corresponding processing claims 15, 16 and 18-20 would thus be allowable under the Doctrine set forth in O.G. Notice dated February 28, 2996 entitled "Guidance on Treatment of Product and Process Claims in light of *In re Ochiai*, *In re Brouwer* and 35 U.S.C. §103(b)".

Explanation of Above Amendments

Claim 5 has been amended to correct an obvious typographical error. The correct solvent name "gamma-butyrolactone" has been inserted.

Claims 7 and 17 have been amended to more correctly identify component (a) as an --epoxidized polyfunctional bisphenol A formaldehyde novalak resin-- rather than simply "an epoxy resin". Basis for this amended language can be found on page 6 of the present specification. Claims 7 and 17 have been amended further to include the casting solvents of claims 5 and 8.

No new matter is intended or believed to be included in any of these amendments.

Rejections/Objections under 35 USC §112

The Examiner rejected claims 7-10 under 35 U.S.C. §112, first paragraph. Applicant respectfully traverses this rejection in view of the above amendments to claim 7. The language requested by the Examiner has been inserted. Note corresponding process claim 17 has also likewise been amended.

The Examiner rejected claim 5 under 35 U.S.C. §112, second paragraph. Applicant respectfully traverses this rejection in view of the above amendment.

Rejections under 35 USC §103

The Examiner rejected claims 1-4 and 7 as being obvious and unpatentable over Janke (U.S. Patent No. 5,726,216), taken in view of Applicant's Disclosure of well known prior art on page 2 of the Specification as well as Schrader (U.S. Patent No. 4,474,929) and Gelorme et al. (U.S. Patent No. 4,882,245). In making this rejection, the Examiner stated the following:

> "Janke et al teaches the instant composition with the exception of specifically combining the listed epoxidized polyfunctional bisphenol A formaldehyde novolak resin more specifically SU-8, with the polyol more specifically Tone 0301, 0305 or 0310 polycaprolactone polyol reactive diluent and with the triaryl sulfonium hexafluoroantimonate salt Cyracure UV I-6974. However, Janke et al does teach as do applicants that radiation cured epoxy resins incorporating cationic photoinitiators tend to be very brittle. Schrader supports this point with respect to SU-8 in particular in his col. 1 disclosure so supports Janke et al specifically in regard to SU-8 resins. Gelorme et al in their examples also report the brittle nature of SU-8 photoresists. Gelorme addresses the problem by using other epoxies as reactive diluents to reduce the brittle nature of the SU-8 resin. In Gelorme, see particularly column 4 and examples. Janke et al are concerned with a broad group of epoxy resins including the same SU-8 epoxidized polyfunctional bisphenol A formaldehyde novolak resin which is applicant's sole concern. Janke et al's solution is broader than that of applicants in that they believe what was needed was a means by which radiation cured cationic epoxies can be toughened and still retain the good thermal and mechanical properties of the original composition. They do that by teaching the incorporation of toughening with the epoxy resin initiator mixture. These toughening agents include thermoplastics, hydroxy-containing thermoplastic oligomers, epoxy-containing thermoplastic oligomers, reactive flexibilizers, elastomers, rubbers, and mixtures thereof. An additional advantage Janke et al teach is obtained by the use of low viscosity reaction flexibilizers to reduce the overall viscosity of the uncured resin mixture. Incorporation of one or more of these toughening agents has resulted in increases in toughness of more than 230% over that of the untoughened epoxy resin according to Janke et al. Thus, with respect to instant claims 1-4, the use of any of the epoxy resins of Janke et al listed inclusive of epoxidized polyfunctional bisphenol A formaldehyde novolak resin with known photoinhibitors as listed such as the triaryl sulfonium

hexafluoroantimonate salt Cyacure UV I-6974 mixed with any of the flexibilizers of Janke et al found compatible would have been prima facie obvious to obtain a less brittle cured epoxy composition. The modifying of the epoxy resin with various polyol additives such as ethylene glycol as reactive diluent is also taught separate from adding the flexibilizer. Gelorme et al in col. 4 of his disclosure does not limit his reactive diluents to epoxies. In lines 25-33, is stated 'other suitable reactive diluents will readily come to mind to those ordinary skill in resin technologies.' In Janke et al, see particularly the Abstract, col. 1, lines 15-21, col. 2, lines 35-55, col. 3, lines 40 to col. 4, lines 47, col. 5, lines 32-33, col. 6, lines 46-col. 7, lines 28, col. 8, lines, lines 1-30, lines 62 to col. 9, lines 20 and lines 56-61, col. 10, lines 11-24, col. 14, lines 3-59. Thus, the prior art teaches adding the capropactones to epoxy resins for the same reason applicants add them to their epoxy resin compositions. The ranges of percentage of the toughener of Janke et al to epoxy resin is found in Tables 1-3 to be from 5 to 30 weight %. Thus, workers of ordinary skill in the epoxy art world would recognize that the SU-8 resins would be mixed with a flexibilizer in the same general amount to obtain a tougher cured coating as set forth by Janke et al. Applicants on page 2 of their specification make clear all but the use of the polyol with respect to the thick film resists SU-8 is known. he addition of a flexibilizer as taught by Janke et al to reduce the known brittle nature of the epoxy would have been prima facie obvious as well. The examiner does note however that Janke et al alone makes the instant composition of claim 1-4 obvious over the prior art in her opinion."

Applicant's arguments filed May 22, 2003 have been fully considered but they are not persuasive. Applicants argue Janke et al. does not teach adding a separate solvent to dissolve the above-noted three ingredients or any specific suggestions for combining the four presently claimed components. The examiner disagrees and as rewritten the rejection to emphasize Janke et al. teachings to the addition of non reactive diluent such as acetone being added to solvent based systems such as prepeg compositions. Thus, Janke et al. does teach the use of a solvent in their compositions when needed for the end use. Thus, a four component system is taught. Applicants argue that the examiner has not pointed out why it is obvious "to select the specific claimed polyfunctional bisphenol A formaldehyde novolak resin along with the specific claimed caprolactone polyol reactive diluent out of the great multitude of possible combinations of compounds mentioned in Janke et al" and that the examiner "never provides any reason why it would be obvious to select these particular classes of compounds and then combine them." They then state "Janke et al. or the other references certainly

offers no reason to do so. It thus appears that the Examiner is attempting improper hindsight or obvious-to-try reasoning by this rejection". In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In response to applicant's argument that the examiner "never provides any reason why it would be obvious to select these particular classes of compounds and then combine them", the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Janke et al. gives the reason to combine every listed example of epoxy resin with every listed example of flexibilizer in his disclosure and that reason is to provide a radiation cured material with improved toughness, i.e. they are very brittle when cured. The examiner presented facts supporting this finding and applicants agreed with it. Janke et al. addresses this problem generally with the addition of their flexibilizers, i.e. component (C). This is the same problem addressed by applicants when they seek to reduce the brittle nature of their cured SU-8 coatings. Thus, the citation of specific species by Janke et al. is held sufficient for their choice to be improved by the flexibilizers given. Janke et al. teaches the reason it is obvious to try their flexibilizers and the prior art teaches that the specific epoxy resin in question has the problem solved by Janke et al. Thus, the rejection is maintained."

Applicants respectfully traverse this Final rejection for the following reasons:

Janke et al is concerned with making toughened epoxy resin/cationic initiator system comprising an epoxy resin; a cationic initiator and a toughening agent (see column 3, lines 1 and 2). The latter ingredient may be either a thermoplastic, hydroxy-containing thermoplastic oligomer, epoxy-containing thermoplastic oligomer, reactive flexibilizer,

rubber, elastomer or mixtures thereof (see column 3, lines 5 to 8)., One of the epoxy resin SU-8 available from Shell (see column 5, lines 32 and 33).

The reference also states that the epoxy resin monomer may be modified by mixing with various additives. See column 6, line 46 to column 7, lists reactive diluents. Included in this long list of such additives are polyols such as glycols, aromatic diphenols and polyphenolic compounds. See column 6, lines 48 to 66.

The cationic initiator includes CYRACURE Cationic Photoinitiator UV1-6974 (see column 8, lines 27 to 29). One of the toughening agents mentioned include flexible polyol compounds also containing long aliphatic groups such as E-caprolactone trial (such as Union Carbide TONE 0301, 0305, 0310) (see column 9, lines 56 to 61).

It should be noted that Janke et al. does not teach adding a separate solvent to dissolve the above-noted three ingredients or any specific suggestion for combining the four (4) presently claimed components.

In all, Janke et al. recites a vast array of possible combinations of epoxy monomers, cationic photoinitiators and toughening agents, but provides no motivation for making the particular selection of components as presently selected. Furthermore, Janke et al. or the present combination of cited references do not teach or suggest two important advantages of the present invention, namely, the better solvent-induced cracking and the adhesive characteristics. Furthermore, Janke does not teach or suggest the specific casting solvents now present in all claims.

Schrader is concerned with preparing certain epoxidized novalacs that have a more closely knit structure than the SU-8 epoxy resin (see column 2, lines 56 to 59). It appears the only specific end uses of these particular epoxidized novalacs are mentioned in short passage at column 18, lines 10 to 25. This passage does not teach the preparation of photoimagable compositions for use as negative photoresists or the mixing of such epoxidized novalacs with either a reactive polyol diluent, a cationic photoinhibitor or a casting solvent, let alone a combination of the four specific ingredients now claimed. In all, it appears the Examiner is using Schrader to confirm that SU-8 is brittle or hard when cured (see column 1, line 45 and lines 65-68). Applicants do not take issue with that fact.

Gelorme, et al. is concerned with making a photoresist composition that contains (a) an epoxyfunctional resin which is capable of being cured by the action of a cation-producing photoinitiator; (b) a reactive diluent which is soluble in developing solvents for

photoresists; and (c) a cationic photoinhibitor, . . . wherein (a) comprises at least about 65% by weight of the resin solids and is dissolved in a suitable solvent; (b) comprises 10 to about 35% by weight of the resin solids; and (c) is present in an amount from about 2 to about 6 parts per 100 parts of resin and is dissolved in a suitable solvent (see column 2, lines (6 to 40). The epoxyfunctional resin can be SU-8 (see column 4, lines 5 to 7). The reactive diluent can be any reactive diluent which is effective as a plasticizer. The only specific classes of reactive diluents mentioned are cycloaliphatic epoxides (see column 4, lines 25 to 40). The photoinitiator may be a triarylsulphonium hexafluoroantimonate (see column 4, lines 62 to 67). Suitable solvents include methyl isobutyrolactone, methyl ethyl lactone and mixtures thereof. It is clear that Gelorme, et al. does not teach any polyol reactive diluents, let alone polycaprolactone polyol reactive diluent.

In all, the present claims are now limited to the allowable subject matter of claim 5.

Accordingly, Applicant submits that none of the references, alone or in combination, anticipate or make obvious the invention as presently claimed and that the application is now in condition for allowance. Therefore, Applicant respectfully requests reconsideration and further examination of the application and the Examiner is respectfully requested to take such proper actions so that a patent will issue herefrom as soon as possible.

If the Examiner has any questions or believes that a discussion with Applicant's attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

Please apply any credits or charge any deficiencies to our Deposit Account No. 23-1665.

Respectfully submitted,
David W. Minsek et al.

DRAFT

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